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(54) **Complementary cleanser device for toilet bowls**

Zusatzreinigungsvorrichtung für Toilettenschüssel

Dispositif de nettoyage complémentaire pour cuvettes de toilettes

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(56) References cited:
DE-A- 3 704 970
DE-U- 29 505 127
US-A- 3 199 739
US-A- 4 192 464
US-A- 5 175 890

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Description

[0001] The present invention relates to a toilet bowl cleanser device.

[0002] It is known that toilet bowls are equipped with a washing out system suitable for changing water at syphon level and in particular for washing out the products of physiological evacuation. Such a cleansing action is performed by the classic water flushing stream which, either from a hopper, or from the outlet of a valve connecting with water distribution system, flows more or less violently from the high side and along the inner walls, towards the bottom of toilet bowls.

[0003] However, not always this washing out action is enough in order to remove all traces of evacuation residues, in particular in those systems in which for cleansing the toilet bowl only that water amount is available which is contained inside the hopper.

[0004] It often happens that even after a number of successive flushings, or continuous water stream releases succeed in obtaining that cleanliness which is so desired owing to aesthetical and hygienic reasons. In fact, besides every toilet bowl, the inevitable presence can be observed of the container for a cleansing brush. This surely is an accessory which is as indispensable as unpleasant to use, impossible to be thoroughly cleaned, unsightly (not to say disgusting) and undoubtedly insanitary, because it can never be kept in a perfectly clean condition. Paradoxically, it should always be disposed off after each use, as it happens for toilet paper, rather than being used again.

[0005] US-A-4.192.464 relates to a compressed air sprayer provided with a handle.

[0006] The task of the present invention is precisely of ridding of the previously complained drawbacks, by providing a complementary cleansing device for toilet bowls which, in a simple, hygienic and effective way, ultimately washes out any sticky evacuation residues which, notwithstanding the water flushes released by toilet bowl washing facility, can have remained adherent to its walls.

[0007] Within the scope of the above recited task, a particular purpose of the invention is of providing a complementary toilet bowl cleanser device which does not absolutely come into contact with the dirty residues to be removed but which operates through a pressurized water jet acting as an intermediate element between dirt to be removed and the user, which water jet is suitably calibrated in order not to generate bounce sprays, and can be oriented as desired.

[0008] Another purpose of the present invention is also of providing a toilet bowl cleanser device which retains its perfectly hygienic conditions during and after use, and consequently can be stored in an absolutely clean and immaculate state.

[0009] Not least purpose of the present invention is also of providing a toilet bowl cleanser device which can be easily and effectively used by all users of toilet bowls irrespective of age, i.e., which will guarantee, in particular when used by children, that a perfect toilet bowl cleansing will be obtained, rather that allowing dirty residues to spread all around, as it sometimes happens when, for the purpose of cleansing the bowl, children use the classic brush.

[0010] The above recited task, as well as the above mentioned purposes and still other purposes which will become clear from the following disclosure, are achieved by a toilet bowl cleanser device according to claim 1.

[0011] The support is constituted by a structural assembly suitable for housing the apparatus for pressurizing water and the relevant control/regulation devices, the tank to be filled/refilled with water with the suitable hooking elements and, functionally resting on it, the water launching nozzle body.

[0012] The tank to be filled/refilled with water can be fixedly fastened onto the support means or, suitably, it can be removably fastened onto it.

[0013] The removable tank, suitable for being hooked onto the support under tightly sealed conditions, consists of a container structure provided with a handle, is open at its top, and its outer bottom portion has such a shape as to get coupled with the support with no possibility of performing axial revolution movements.

[0014] The fixedly fastened tank consists of a container structure provided with a filling/refilling mouth and a tightly sealing system.

[0015] The suitable equipment for increasing water pressure up to the useful pressure value, can be suitably constituted by an air pump manually actuated by means of a lever, or an electrical motor driven pump fed with power from the mains, or by accumulators.

[0016] Suitable valve devices are designed to keep water pressure at its useful pressure value, while controlling it to remain within safety values. In electrical motor driven models, such devices also control the electrical motor operating times/periods, as necessary in order to keep pressure constant.

[0017] The water launching nozzle body, while is connected to the tank (in its turn fastened onto the support means) through a flexible, extensible hose means, can be taken up and hand carried by the user, who can suitably orient it, and is equipped with the necessary control device for controlling the water jet launching/stopping, and a water jet regulating nozzle.

[0018] The so conceived device can be installed at will nearby the toilet bowl, practically instead of the classic brush container. The "sitting" time on toilet bowl is largely enough in order to pressurize water contained inside the tank either manually by the user, by means of a plurality of actuation movements of the lever, or by air pumping by the electrical motor driven pump, consequently it will be ready to allow the user to perform the complementary bowl cleansing action, by means of the water jets it generates, should the user regard it as useful.

[0019] Further characteristics, features and advantages will be clearer from the following disclosure of a preferred, non-exclusive embodiment of a toilet bowl cleanser device, illustrated for exemplifying, non-limitative purposes, with the aid of the accompanying drawings, in which

- Figure 1 shows a frontal view of the toilet bowl cleanser device complete with water container and water launching nozzle body, according to the present invention.
- Figure 2 shows a sectional view according to section line II-II of Figure 1, of the hand-operated embodiment of the cleanser device with the removable water tank being hooked inside its seat in a tightly sealed condition and the water launching nozzle body being moved away from its resting seat and pressed in order to launch pressurized water jets.
- Figure 3 shows a sectional view according to section line II-II of Figure 1, of the electrical motor driven embodiment of the cleanser device for toilet bowl.
- In Figure 3C a simplified view is shown of the useful pressure control valve, the motor driven pump and the electrical system for automatic stopping/starting up.
- In Figure 4A the closing/opening valve is displayed which controls the water flow to the external water jet launching nozzle, installed inside the elements of the water launching nozzle body and namely, in two different operating positions;
- In Figure 4B a sectional view is shown of the useful pressure control valve which, in the electrical motor driven embodiments of the present device also controls the automatic electrical motor stopping/starting up;
- Figure 4C shows a partial sectional view of the mutual revolution-movements-preventing coupling between the removable tank and the plate.
- Figure 4D shows a partial sectional view of the linear development of the circumferences of the cam crowns of the base and of the plate.
- In Figure 4E a first embodiment is shown of the fixed tank with its loading mouth being engaged by the tightly sealing system.
- In Figure 4F a second embodiment is shown of the fixed tank with its loading mouth being engaged by the tightly sealing system.

[0020] Referring to the above mentioned figures, in Figure 1 a front view is displayed of the toilet bowl cleanser device which comprises a hollow structure (5*) with a shape which preferably, but not necessarily, is frusto-conical and having in its bottom portion a chamber suitable for housing the tank (6*), and, in its central portion , the pressurizing lever (17*), in the case of the hand-operated embodiment; or the switch (20*) in the case of the electrical motor driven embodiment; and, at its top, under functionally resting conditions, the water jet launching body (25*) hinged with the half-body (30*), with, above both of them, the nozzle means (26*).

[0021] In Figure 2, which shows a sectional view made according to the section line II and II, the hand-operated embodiment of the device is shown in which one can see the base (1*), from which the central pin (28*) protrudes and, diametrically around it, the cam crown (31*) of the base (1*), functionally engaged with the cam crown (32*) of the plate (3*). Said plate (3*) can be seen in its high position, carried by the cams (31*) and (32*) and, resting above it, the removable tank (6*) can be seen which is kept pressed with its filling/refilling opening, against the tightly sealing gasket (10*) provided on the top inner portion of the structure (9*). The screw (4*) is one from the plurality of screws which keep the base (1*) fastened to the inner structure (9*), constraining by interference the table (2*). In (33*) a screw is shown from the plurality of screws which keep the base (1*) fastened to the outer structure (5*). On the top inner portion of the structure (9*) furthermore visible are the fitting (11*) which puts the dipleg (7*) into communication with the tubular duct (22*), the non-return valve (29*) of the hand-operated air pump (12*) and the pressure regulation valve (24*).

[0022] Above the inner structure (9*) the hand-operated air pump (12*) can be seen, which is engaged by the lever (17*) acting on the piston stem (18*).

[0023] In (22*) the tubular duct can be seen which allows pressurized water to reach the extensible hose coil (23*) which, in its turn, leads to the opening/closure valve (14*) provided inside the water jet launching body (25*) and (30*).

[0024] The outer structure (5*) is only displayed as regards its task of functional aesthetical shell with its collar (13*) of the hose coil (23*) housing chamber, and not performing its task of acting as a support and elastic retention means for the water jet launching body (25*) and (30*) which, in this Figure 2, is shown in its use position; the arrows indicate the movement performed by the half-bodies (30*) and (35*) when they are pressed by the user to move towards each other, with this movement resulting in water to be released from nozzle means (26*).

[0025] In Figure 3 a sectional view according to line II-II of Figure 1 is displayed of the electrical motor driven embodiment of the cleansing device for toilet bowls which is additionally shown in its situation in which the removable tank (6*) is ready to be extracted from its housing chamber, in order to be refilled with water by the user.

[0026] In that Figure, said tank (6*) is shown resting on the plate (3*), with its loading mouth being moved away from the tightly sealing gasket (10*) as a consequence of the fact that the cams (31*) and (32*), owing to the revolutionary movement performed in order to disengage the tank, have returned down to rest against their respective profiles, thus causing the tank to move downwards. Above the inner structure (9*) the electrical

motor driven pump (14*) can be seen which, according to manufacturer's willing, can either be connected with the mains by means of a power feed cable (15*), or by means of accumulators (16*) through the relevant electrical system (35*), functionally controlled by the switch (20*), the microswitch (19*) and the stem of the valve (24*) provided for keeping active the motion cycle. In the top portion of the external structure (5*), the turns (23*) of the hose coil can be observed housed inside the hose coil housing chamber ending with the collar (13*) which keeps elastically constrained the elements (25*) and (30*) of the water jet launching body, kept expended by the spring (27*) of the valve (34*) housed between them.

[0027] In the detail of Figure 3C, the electrical system is schematically represented which is provided in order to keep the inner pressure inside the water tank at its useful pressure value and to control the motion cycle stopping/starting up: (20*) is the starting up/stopping switch in its "active" position, (24*) is the pressure control valve which, when the useful pressure value is reached, by acting with its own stem on the microswitch (19*) stops the motion. Obviously, a pressure decrease will cause said stem to move downwards, with the motion cycle being restarted, and so forth.

[0028] In Figure 4A a detail sectional view is shown of the water jets opening/closing valve (34*), with the distribution piston being displayed sectioned along its middle axis, in order to display the "opening" situation when, by being moved inwards by the half-body (30*), said distribution piston compresses the spring (27*), and the "closing" situation when, by being urged to move outwards from said spring (27*), said distribution piston causes the elements (30*) and (25*) to move outwards until they reach their stroke limit.

[0029] In Figure 4B a partial sectional view is shown of the valve (24*) which controls the useful pressure value, the electrical motor movement cycle, and so forth.

[0030] In Figure 4C, a partial sectional view according to line IV-IV of Figure 1, is shown of a portion of the plate (3*) with the element (36*) of said plate being in position of axial-revolution-movement preventing engagement with the element (21*) of the tank (6*).

[0031] In Figure 4D, the linear development is shown of the circumferences of the cams (31*) and (32*) in position of maximal axial thrust.

[0032] In Figure 4E a partial sectional view is shown of the fixed tank displayed as being functionally connected under pressure against the tightly sealing gasket (10*) by means of the screw threaded collar (37*), with its filling/refilling mouth being tightly sealed by the element (38*).

[0033] In Figure 4F, a view is shown of the tank fastening as obtained by means of a bayonet coupling.

[0034] The tightly sealing element shown is used for both closure systems proposed.

[0035] The above disclosed invention is constituted by the whole of disclosed elements. However, as we remarked in the disclosure, while always falling within the scope of the inventive concept and finally producing the aimed at effects, owing to reasons of cheapness or market demand, different embodiments of some of the disclosed elements may be envisaged, e.g.:

According to a particular embodiment, the removable tank can be hooked in a tightly sealed condition to the carrier support. Said tank consists of a container structure provided with a handle, is opened at its top side and externally ends with its bottom portion with a suitable shape for getting coupled with an axial-rotational-movement preventing constraint with a mating shape arising from a plate provided on the bottom of the housing chamber provided inside the body of the support means.

The centrally hinged plate rests with a cam crown it is provided with, on a corresponding cam crown extending from the support base. After filling/refilling tank with water, the user hooks it under tightly sealed conditions by loading said tank with its bottom under axial rotational movements preventing engagement on the plate and then rotating it axially, by using the handle it is provided with. Dragged in this movement by the engagement constraint, the plate will move upwards, by being so pushed by the coupled cams, bringing with itself and causing the tank to move upwards until said tank gets compressed, statically blocked with its filling/refilling mouth against the tightly sealing gasket, installed on the inner top portion of the chamber.

- According to another embodiment, the fixedly fastened tank consists of a container structure provided with a water filling/refilling mouth provided with an access and tightly sealing elements. Such a tank is mounted functionally fixed and tightly sealed against the sealing gasket installed in the inner top portion of the housing chamber provided inside the support means.

[0036] As already mentioned, according to the particular embodiment of the device, the water pressurization inside the tank can be obtained by means of a hand-operated pump or a motor-driven pump driven by a motor electrically connected with the mains, or power fed from electrical accumulators.

[0037] In the first case, said task of water pressurizing is committed to the hand actuation of a lever protruding from the support means, with said lever protruding to such an extent and being so positioned as to make extremely easy and comfortable the required movements to be performed by the user sitting on the toilet. The lever, hinged onto a pivot inside the support means acts on the piston of the pump and the obtained pressure is controlled by a pressure control means.

[0038] In the second case, if the pump, installed inside the support, is driven by an electrical motor power fed from the mains, there will be a cable with a suitable connector which functionally comes out from the support. If, on the contrary, the electrical power is supplied by

electrical accumulators, the support means will be provided with a suitable housing chamber in order to functionally house the accumulators.

[0039] In both said electrical motor driven embodiments, the initial pump starting up is controlled by the user acting on a switch installed on the external body of the support, whereas the electrical motor stopping and starting up will be controlled by a pressure switch so regulated as to open the electrical circuit (i.e., stop the electrical motor) when the pressure of overhead air reaches the established value, and to close the circuit again (i. e., start up again the electrical motor when this pressure value approaches the low limit of the pressure range necessary for the production of effective water jets.

[0040] The electrical motor driven toilet bowl cleanser device can be indefinitely left in the above disclosed situation, i.e., connected with the mains and with the switch keeping the circuit closed, because, as the whole device is tightly sealed, the electrical motor and consequently the pump will stop acting as soon as the operating pressure is reached and will remain in such a condition (i.e., inactive) until another use of water jets is required; only then, the intervention of the pressure switch will cause them to start again and will cause them to stop as soon as the optimal pressure value is reached again, with this cycle being repeated indefinitely.

[0041] Obviously, if the user so desires, the electrical circuit can be disabled by acting on the switch after each used; this will not cause the residual pressure inside the tank to get lost; on the contrary such a residual pressure inside the tank will cause the electrical motor operating time to be shorter when the user will act once more on the switch in order to start up the motor again.

[0042] The portable water jet launching body, which can be comfortably hold by the user with his hand, and can be oriented at will nearby the support means contains the water jet launching and interrupting device and a jet regulating nozzle. It consists of a light-weight, easily handled, nozzle, constituted by two half-bodies hinged onto each other in a "nut-cracker" fashion, and can be elastically and limitedly moved away from, and towards each other, and the chamber defined by them contains the water jets opening and closing valve, which can be actuated by the operator by him simply pressing the nozzle in his hand, thus causing the half-bodies to move towards each other until they reach their stroke limit. The water jet launching body ends at it front side with the water jets diffusing nozzle, and at its rear side with the flexible, extensible hose extending from the fitting which puts it into connection with the dipleg.

[0043] The support means consists of a first internal structure which, only for the sake of disclosure simplification, we will define as being constituted by a cylinder closed at both ends and having, on a side of it, a wide passage which constitutes the tank entering and housing chamber. In the particular embodiment with the removable tank, from the inner side of the cylinder base a pin protrudes centrally and, diametrically around this, a cam crown extends. A plate having on its bottom face a corresponding cam crown to the first one and on its upper side a "U" shape hollow, is rotatably coupled with the pin, functionally resting with its cam crown on the cam crown extending from the base.

[0044] On the inner top surface of the cylinder a ring-shaped tightly sealing gasket is installed and inside the area defined by this ring, the following elements are provided: the fitting for connecting the flexible dipleg for water intake, the duct atmospherically communicating with the pressure switch and the non-return valve for air coming from the pump. On the upper side, the following elements are installed: the fitting for connecting the pipe for pressurized water flow, the pressure switch and the hand-operated or electrical motor-driven pump for pressurizing air feeding. The disclosed structure and the relevant elements are contained inside a second external structure performing both the tasks of aesthetical shell and functional assembly for the other elements as: base, plate, table, hand-operated lever, switch, energy accumulator, and so forth, besides serving, at its end top, as a chamber for orderly receiving and housing the turns of the hose coil leading pressurized water to the nozzle, as wells as, with its upper opening, as functional resting means for the water jet launching body.

[0045] The embodiment provided with the fixedly fastened tank is different from the above disclosed embodiment because it is provided with a system for fixedly fastening the tank, obtained by means of a screw-thread borne by a collar extending from the internal top portion of the support, or a bayonet coupling, and because the system of the plate with pushing cams is not provided.

[0046] In practical use, the user, after filling the tank with water and fastening it to the support under tightly sealed conditions and will actuate the pump, thus compressing the overhead air above the water inside the tank, until the cleansing device operating pressure is reached.

[0047] Under these conditions, the pressurized air bubble forces water to flow from the tank into the dipleg, then, from here, to flow upwards along the hose coil leading to the closing/opening valve installed inside the water jet launching body.

[0048] Then, the user, after grasping in his hand and taking up the water jet launching body from its elastic rest position, will be free to orient it thanks to the extensibility of the hose coil, aiming, from distance, at the material to be removed from the bowl and then will act on the opening valve in order to launch against said material as many water jets as needed in order to remove it.

[0049] The so conceived invention can be supplied with modifications and changes, all falling within the scope of the inventive concept.

[0050] Furthermore, all details can be replaced by other technically equivalent elements.

[0051] In practice, the used materials, provided they are compatible with the specific use envisaged, as well as have the dimensions and the shapes as necessary

for the invention, can be whichever, according to the requirements.

Claims

1. Toilet bowl cleanser device characterized in that it comprises a support (5, 2, 9) carrying:

   - a tank (6) which can be filled/refilled with water and means (10, 28, 31, 32) securing it to the support (5, 2, 9) under tightly sealed conditions;
   - equipment (17, 20) for pressurizing water in the tank and a valve system (24) for controlling the pressure and keeping it at its useful value;
   - a water launching nozzle body (25, 30) provided with a tubular, extensible (hose) element (23) connecting it with the tank (6), removably supported on a resting seat (13) on the support (5, 2, 9).

2. Toilet bowl cleanser device according to claim 1, characterized in that said support carrying the above said elements can be suitably statically positioned (fastened), whereas, although it remains functionally connected with said support by means of said flexible, extensible hose means (23), the water launching nozzle body (25, 30) can be moved away from it and, while being hand-carried by the user, can be freely oriented nearby said support (5, 2, 9).

3. Toilet bowl cleanser device according to claim 1 or 2, characterized in that owing to the extensibility and flexibility of the hose coil (23), the water jet launching body (25, 30) can be freely oriented, thus enabling the user to aim at the "filth" from a remote position, and to act on the same water jet launching body (25, 30), in order to "strike" the material to be removed with as many water jets as necessary in order to remove it.

4. Toilet bowl cleanser device according to the preceding claims, characterized in that the water jet launching body is constituted by an easily handled nozzle (26) consisting of two half-bodies (25, 30) hinged to each other in a "nut cracker" fashion which are elastically (27) and limitedly moveable apart from and towards each other, and containing the water jet opening and closing valve (34), simply actuatable by the user pressing the nozzle inside his hand, causing said half-bodies (25, 30) to move towards each other until they reach their stroke end.

5. Toilet bowl cleanser device according to claim 4, characterized in that thanks to the possibility of moving towards each other both half-bodies (25, 30) which compose it, said water jet launching body can be partially entered with its "male" bottom portion inside the "female" collar (13) which constitutes the top opening of the support (5) in a functionally static and removable position.

6. Toilet bowl cleanser device according to claim 4, characterized in that the hose duct (23) which connects the tank inside the support means and the water jet launching body (25, 30) with each other, is constituted by a flexible material to which a suitable coil shape is given and that the plurality of turns which compose said coil are orderly housed inside the housing chamber provided inside said support (5, 9).

7. Toilet bowl cleanser device according to the preceding claims, characterized in that inasmuchas the water jets can be remotely oriented and can be repeated a plurality of times, the toilet bowl can be completely cleansed, with no need for the user to come into contact with the "filth" to remove, with a plurality of suitably calibrated water jets acting as intermediate elements between said filth and the device.

8. Toilet bowl cleanser device according to the preceding claims, characterized in that during and after the use the device retains its hygienic condition and -can be left absolutely clean and immaculate after being used.

9. Toilet bowl cleanser device according to the preceding claims, characterized in that its cleansing action is performed by water jets which, owing to their dynamics, do not tend to smear the filth on the inner walls of the toilet bowl, but remove it with force and wash it out together with them towards the sink.

10. Toilet bowl cleanser device according to the preceding claims, characterized in that it is provided with a water tank (6) which can be disengaged and hooked (37, 39) under tightly sealed conditions, by simply revolving it axially by a half turn, it being forced to press its filling mouth against the tightly sealing gasket (10) by the thrust applied by the cam (31, 32) urged plate on which it rests under a condition of rotation hindering constraint.

11. Toilet bowl cleanser device according to the preceding claims, characterized in that it also comprises a fixedly fastened tank (6), equipped with a water loading opening and an access and tightly sealing element.

12. Toilet bowl cleanser device according to the preceding claims, characterized in that it is provided with the necessary equipment for producing air which is constituted by a hand-operated pump (12) which

can be actuated by means of a lever (17) which protrudes from the support to such an extent and at such a height as to render extremely comfortable, relatively to the "sitting" position, those few movements needed by the user to bring water up to the useful pressure for producing effective water jets.

13. Toilet bowl cleanser device according to the preceding claims, characterized in that it is provided with a pressure control valve (24) of pressure switch character which performs a venting function when the maximal useful limit value is exceeded.

14. Toilet bowl cleanser device according to the preceding claims, characterized in that the hand-operated pressurizing air feeding equipment makes it possible the toilet bowl to be fitted the cleanser device also when a mains plug is not comfortably available in the bathroom.

15. Toilet bowl cleanser device according to the preceding claims, characterized in that it is provided with an electrical motor driven pressurizing air feeding equipment (14) with said electrical motor being fed with power from the mains, which enables the user, by him simply acting on a switch (20), to have always and within useful time, the tank (6) under pressure and therefore ready for as many water jets as the user will wish to use.

16. Toilet bowl cleanser device according to the preceding claim, characterized in that its pressurizing air feeding equipment (14) is electrical motor driven with power being fed from incorporated power accumulators (16), thus displaying, besides the use advantages mentioned in the preceding claim, also the advantage of allowing the device to be positioned more freely.

17. Toilet bowl cleanser device according to the preceding claims, characterized in that in both electrical motor driven embodiments disclosed above, it is equipped with an automatic system for working cycle stopping, restarting up and keeping operating, which automatic system is constituted by a valves-electrical whole.

Patentansprüche

1. Toilettenschüssel-Reinigungsvorrichtung, dadurch gekennzeichnet, daß sie ein Gestell (5, 2, 9) aufweist, das

   - einen Tank (6) trägt, der mit Wasser gefüllt/nachgefüllt werden kann, und eine Einrichtung (10, 28, 31, 32), durch die er am Gestell (5, 2, 9) unter fest abgedichteten Bedingungen befestigt ist;
   - eine Ausrüstung (17, 20) zum Unterdrucksetzen von Wasser im Tank und ein Ventilsystem (24) zum Regulieren des Druckes und zu dessen Halten auf einem Nutzwert;
   - einen Wasserausstoßdüsenkörper (25, 30), der mit einem ihn mit dem Tank (6) verbindenden röhrenförmigen, ausziehbaren (Schlauch) Element (23) versehen und abnehmbar auf einer Ruheauflage (13) am Gestell (5, 2, 9) abgestützt ist.

2. Toilettenschüssel-Reinigungsvorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß das die oben genannten Elemente tragende Gestell zweckmäßig ortsfest positioniert (befestigt) werden kann, während der Wasserausstoßdüsenkörper (25, 30), obgleich er funktionell mit dem Gestell mittels der flexiblen, ausziehbaren Schlaucheinrichtung (23) verbunden bleibt, von diesem entfernt werden kann, und, während er von dem Benutzer von Hand geführt ist, frei nahe dem Gestell (5, 2, 9) ausgerichtet werden kann.

3. Toilettenschüssel-Reinigungsvorrichtung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß aufgrund der Ausziehbarkeit und Flexibilität des Schlauchwickels (23) der Wasserstrahlausstoßkörper (25, 30) frei ausgerichtet werden kann und somit der Benutzer in die Lage versetzt wird, auf den "Schmutz" von einer entfernten Stelle aus zu zielen und auf denselben Wasserstrahlausstoßkörper (25, 30) einzuwirken, um das zu entfernende Material mit so vielen Wasserstrahlen zu "treffen", wie notwendig sind, um es zu entfernen.

4. Toilettenschüssel-Reinigungsvorrichtung nach den vorhergehenden Ansprüchen, dadurch gekennzeichnet, daß der Wasserstrahlausstoßkörper von einer leicht zu handhabenden Düse (26) gebildet ist, die aus zwei miteinander nach "Nußknacker"-Art gelenkig verbundenen Halbkörpern (25, 30) besteht, die elastisch (27) und begrenzt voneinander fort und aufeinander zu bewegbar sind und das Wasserstrahlöffnungs- und Schließventil (34) enthalten, das durch den Benutzer einfach durch Drükken der Düse in seiner Hand betätigbar ist, wodurch die Halbkörper (25, 30) gegeneinander bewegt werden, bis sie ihr Hubende erreichen.

5. Toilettenschüssel-Reinigungsvorrichtung nach Anspruch 4, dadurch gekennzeichnet, daß der Wasserstrahlausstoßkörper dank der Möglichkeit des Gegeneinanderbewegens der beiden Halbkörper (25, 30), die ihn bilden, teilweise mit seinem "männlichen" unteren Bereich in einer funktionell stationären und abnehmbaren Position in den "weiblichen" Ring eintreten kann, der die obere Öffnung des Ge-

stells (5) bildet.

6. Toilettenschüssel-Reinigungsvorrichtung nach Anspruch 4, dadurch gekennzeichnet, daß die Schlauchleitung (23), die den Tank im Inneren des Gestells und den Wasserstrahlausstoßkörper (25, 30) miteinander verbindet, von einem flexiblen Material gebildet ist, dem eine geeignete Wickelform gegeben ist, und daß die Mehrzahl von Windungen, die den Wickel bilden, in dem im Inneren des Gestells (5, 9) vorgesehenen Lagerraum ordentlich untergebracht sind.

7. Toilettenschüssel-Reinigungsvorrichtung nach den vorhergehenden Ansprüchen, dadurch gekennzeichnet, daß, insofern als die Wasserstrahlen fern ausgerichtet und mehrere Male wiederholt werden können, die Toilettenschüssel, ohne daß für den Benutzer die Notwendigkeit besteht, mit dem zu entfernenden "Schmutz" in Berührung zu kommen, mit mehreren in zweckmäßiger Weise bemessenen, als Zwischenelemente zwischen dem Schmutz und der Vorrichtung wirkenden Wasserstrahlen vollständig gereinigt werden kann.

8. Toilettenschüssel-Reinigungsvorrichtung nach den vorhergehenden Ansprüchen, dadurch gekennzeichnet, daß während und nach der Benutzung die Vorrichtung ihren hygienischen Zustand behält und absolut sauber und tadellos nach der Benutzung verlassen werden kann.

9. Toilettenschüssel-Reinigungsvorrichtung nach den vorhergehenden Ansprüchen, dadurch gekennzeichnet, daß ihre Reinigungsfunktion durch Wasserstrahlen erfolgt, die aufgrund ihrer Dynamik nicht die Tendenz haben, den Schmutz an den Innenwänden der Toilettenschüssel zu verschmieren, sondern ihn unter Krafteinwirkung entfernen und zum Abfluß abspülend mitnehmen.

10. Toilettenschüssel-Reinigungsvorrichtung nach den vorhergehenden Ansprüchen, dadurch gekennzeichnet, daß sie mit einem Wassertank (6) versehen ist, der außer Eingriff gebracht und unter fest abgedichteten Bedingungen verhakt (37, 39) werden kann, indem er einfach in axialer Richtung um eine halbe Drehung gedreht wird, wobei er zwangsläufig mit seiner Einfüllmündung gegen die fest abdichtende Dichtung (10) durch den Schub drückt, der durch die mittels Nocken (31, 32) beaufschlagte Platte aufgebracht wird, auf der er in einem Zwangsbedingungen verhindernden Rotationszustand ruht.

11. Toilettenschüssel-Reinigungsvorrichtung nach den vorstehenden Ansprüchen, dadurch gekennzeichnet, daß sie ferner einen ortsfest befestigten Tank (6) aufweist, der mit einer Wasserladeöffnung und einem Zugang und fest abdichtenden Element ausgerüstet ist.

12. Toilettenschüssel-Reinigungsvorrichtung nach den vorhergehenden Ansprüchen, dadurch gekennzeichnet, daß sie mit der notwendigen Ausrüstung zum Erzeugen von Luft versehen ist, die von einer handbetätigten Pumpe (12) gebildet ist, die mittels eines Hebels (17) betätigt werden kann, der vom Gestell mit einem solchen Ausmaß und in einer solchen Höhe vorsteht, daß, in bezug auf die "sitzende" Position diejenigen wenigen Bewegungen, die für den Benutzer nötig sind, um das Wasser auf den Nutzdruck zum Erzeugen effektiver Wasserstrahlen zu bringen, außerordentlich bequem sind.

13. Toilettenschüssel-Reinigungsvorrichtung nach den vorhergehenden Ansprüchen, dadurch gekennzeichnet, daß sie mit einem Druckregulierventil (24) der mit Druckschalter arbeitenden Art versehen ist, das eine Entlüftungsfunktion ausführt, wenn der maximale Nutzgrenzwert überschritten wird.

14. Toilettenschüssel-Reinigungsvorrichtung nach den vorhergehenden Ansprüchen, dadurch gekennzeichnet, daß die handbetätigte Luftzuführausrüstung zum Unterdrucksetzen die Möglichkeit schafft, die Toilettenschüssel auch dann mit der Reinigungsvorrichtung auszustatten, wenn ein Stromstecker im Badezimmer nicht in bequemer Weise zur Verfügung steht.

15. Toilettenschüssel-Reinigungsvorrichtung nach den vorhergehenden Ansprüchen, dadurch gekennzeichnet, daß sie mit einer von einem elektrischen Motor angetriebenen Luftzuführeinrichtung (14) zum Unterdrucksetzen versehen ist, wobei der Elektromotor mit Strom aus dem Netz versorgt wird, was es dem Benutzer, indem er einfach einen Schalter (20) betätigt, möglich macht, den Tank (6) stets und innerhalb der Nutzzeit unter Druck zu setzen und damit für so viele Wasserstrahlen bereitzuhalten, wie der Benutzer zu verwenden wünscht.

16. Toilettenschüssel-Reinigungsvorrichtung nach dem vorhergehenden Anspruch, dadurch gekennzeichnet, daß ihre Luftzuführeinrichtung (14) zum Unterdrucksetzen von einem Elektromotor angetrieben ist, wobei der Strom von eingebauten Stromakkumulatoren (16) zugeführt wird, womit neben den im vorhergehenden Anspruch erwähnten Vorteilen auch der Vorteil geboten wird, daß die Vorrichtung freier positioniert werden kann.

17. Toilettenschüssel-Reinigungsvorrichtung nach den vorstehenden Ansprüchen, dadurch gekennzeichnet, daß bei beiden oben beschriebenen Ausfüh-

rungsformen mit Elektromotorantrieb die Vorrichtung mit einem automatischen System zum Stoppen des Arbeitszyklus, erneuten Starten und Inbetriebhalten ausgerüstet ist, welches automatische System von einer Ventil-Elektroeinheit gebildet ist.

Revendications

1. Dispositif de nettoyage de cuvette de toilettes, caractérisé en ce qu'il comprend un support (5, 2, 9) supportant :

   - un réservoir (6) qui peut être rempli/rempli à nouveau d'eau et des moyens (10, 28, 31, 32) le fixant au support (5, 2, 9) dans des conditions de bonne étanchéité ;
   - un équipement (17, 20) pour mettre l'eau sous pression dans le réservoir et un système de vanne (24) pour contrôler la pression et la maintenir à sa valeur d'utilisation ;
   - un corps d'ajutage de lancement d'eau (25, 30) pourvu d'un élément (tuyau) extensible, tubulaire (23) le reliant au réservoir (6), supporté de manière amovible sur un siège de repos (13) sur le support (5, 2, 9).

2. Dispositif de nettoyage de cuvette de toilettes selon la revendication 1, caractérisé en ce que ledit support supportant lesdits éléments ci-dessus peut être, de façon appropriée, positionné de manière statique (attaché), tandis que, bien qu'il reste fonctionnellement relié audit support au moyen desdits moyens formant tuyau flexible extensible (23), le corps d'ajutage de lancement d'eau (25, 30) peut être éloigné de celui-ci et, alors qu'il est tenu à la main par l'utilisateur, peut être orienté librement à proximité dudit support (5, 2, 9).

3. Dispositif de nettoyage de cuvette de toilettes selon la revendication 1 ou 2, caractérisé en ce que, du fait de l'extensibilité et de la flexibilité de la bobine de tuyau (23), le corps de lancement de jet d'eau (25, 30) peut être orienté librement, permettant ainsi à l'utilisateur de viser la "saleté" à partir dune position distante et d'agir sur ledit corps de lancement de jet d'eau (25, 30) afin de "frapper" la matière à enlever avec autant de jets d'eau que nécessaire afin de l'enlever.

4. Dispositif de nettoyage de cuvette de toilettes selon les revendications précédentes, caractérisé en ce que le corps de lancement de jet d'eau est constitué par un ajutage (26) facilement manipulé consistant en deux moitiés de corps (25, 30) articulées l'une avec l'autre à la manière d'un "casse-noix" qui sont mobiles élastiquement (27) et de façon limitée l'une vers l'autre et loin l'une de l'autre, et contenant la vanne d'ouverture et de fermeture de jet d'eau (34), actionnable simplement par la pression de la main de l'utilisateur sur l'ajutage entraînant lesdites moitiés de corps (25, 30) à se rapprocher l'une de l'autre jusqu'à ce qu'elles atteignent leur fin de course.

5. Dispositif de nettoyage de cuvette de toilettes selon la revendication 4, caractérisé en ce que, du fait de la possibilité de déplacer les deux moitiés de corps (25, 30) qui le composent l'une vers l'autre, ledit corps de lancement de jet d'eau peut être entré partiellement, avec sa partie inférieure "mâle", à l'intérieur du collier "femelle" (13) qui constitue l'ouverture supérieure du support (5) dans une position fonctionnellement statique et amovible.

6. Dispositif de nettoyage de cuvette de toilettes selon la revendication 4, caractérisé en ce que le tuyau (23), qui relie le réservoir à l'intérieur des moyens de support et le corps de lancement de jet d'eau (25, 30) l'un à l'autre, est constitué par un matériau flexible auquel une forme de bobine appropriée est donnée et en ce que la pluralité de tours qui composent ladite bobine sont logés de manière ordonnée à l'intérieur de la chambre de logement prévue à l'intérieur dudit support (5, 9).

7. Dispositif de nettoyage de cuvette de toilettes selon les revendications précédentes, caractérisé en ce que, vu que les jets d'eau peuvent être orientés à distance et peuvent être répétés une pluralité de fois, la cuvette de toilettes peut être entièrement nettoyée, sans que l'utilisateur ait besoin d'entrer en contact avec la "saleté" à enlever, une pluralité de jets d'eau calibrés de manière appropriée agissant en tant qu'éléments intermédiaires entre ladite saleté et le dispositif.

8. Dispositif de nettoyage de cuvette de toilettes selon les revendications précédentes, caractérisé en ce que, pendant et après l'utilisation, le dispositif conserve son état hygiénique et peut être laissé absolument propre et immaculé après avoir été utilisé.

9. Dispositif de nettoyage de cuvette de toilettes selon les revendications précédentes, caractérisé en ce que son action de nettoyage est effectuée par des jets d'eau qui, du fait de leur dynamique, n'ont pas tendance à étaler la saleté sur les parois internes de la cuvette de toilettes, mais l'enlèvent avec force et l'entraînent avec eux vers la fosse.

10. Dispositif de nettoyage de cuvette de toilettes selon les revendications précédentes, caractérisé en ce qu'il est pourvu d'un réservoir d'eau (6) qui peut être désengagé et accroché (37, 39) dans des conditions de bonne étanchéité, simplement en le faisant

tourner axialement d'un demi-tour, le forçant à presser son ouverture de remplissage contre le joint d'étanchéité (10) du fait de la poussée appliquée par la plaque poussée par came (31, 32) sur laquelle il repose dans une condition de contrainte d'entrave à la rotation.

11. Dispositif de nettoyage de cuvette de toilettes selon les revendications précédentes, caractérisé en ce qu'il comprend également un réservoir (6) attaché fixement, pourvu d'une ouverture de chargement d'eau et d'un élément d'accès et d'étanchéité.

12. Dispositif de nettoyage de cuvette de toilettes selon les revendications précédentes, caractérisé en ce qu'il est pourvu de l'équipement nécessaire pour produire de l'air, qui est constitué par une pompe à main (12) qui peut être actionnée au moyen d'un levier (17) qui s'étend depuis le support d'une longueur et à une hauteur telles qu'elles rendent extrêmement confortables, par rapport à la position "assise", les quelques mouvements nécessaires de l'utilisateur pour amener l'eau à la pression d'utilisation pour produire des jets d'eau efficaces.

13. Dispositif de nettoyage de cuvette de toilettes selon les revendications précédentes, caractérisé en ce qu'il est pourvu d'une vanne de contrôle de pression (24) de type interrupteur à pression qui exécute une fonction de mise à l'air libre lorsque la valeur limite d'utilisation maximale est dépassée.

14. Dispositif de nettoyage de cuvette de toilettes selon les revendications précédentes, caractérisé en ce que l'équipement d'alimentation en air de mise sous pression commandé manuellement permet d'équiper la cuvette de toilettes du dispositif de nettoyage également lorsqu'une prise secteur n'est pas disponible de manière confortable dans la salle de bains.

15. Dispositif de nettoyage de cuvette de toilettes selon les revendications précédentes, caractérisé en ce qu'il est pourvu d'un équipement d'alimentation en air de mise sous pression à moteur électrique (14), ledit moteur électrique étant alimenté en électricité à partir du secteur, ce qui permet à l'utilisateur, simplement en agissant sur un interrupteur (20), d'avoir à tous moments et en temps utile, le réservoir (6) sous pression et, par conséquent, prêt pour autant de jets d'eau que l'utilisateur souhaitera utiliser.

16. Dispositif de nettoyage de cuvette de toilettes selon les revendications précédentes, caractérisé en ce que son équipement d'alimentation en air de mise sous pression (14) est commandé par moteur électrique, l'électricité étant fournie par des accumulateurs incorporés (16), présentant ainsi, outres les avantages d'utilisation mentionnés dans la revendication précédente, également l'avantage de permettre de positionner le dispositif plus librement.

17. , Dispositif de nettoyage de cuvette de toilettes selon les revendications précédentes, caractérisé en ce que, dans les deux modes de réalisation à moteur électrique présentés ci-dessus, il est pourvu d'un système automatique pour arrêter le cycle de fonctionnement, redémarrer et maintenir le fonctionnement, lequel système automatique est constitué dans son ensemble de vannes électriques.

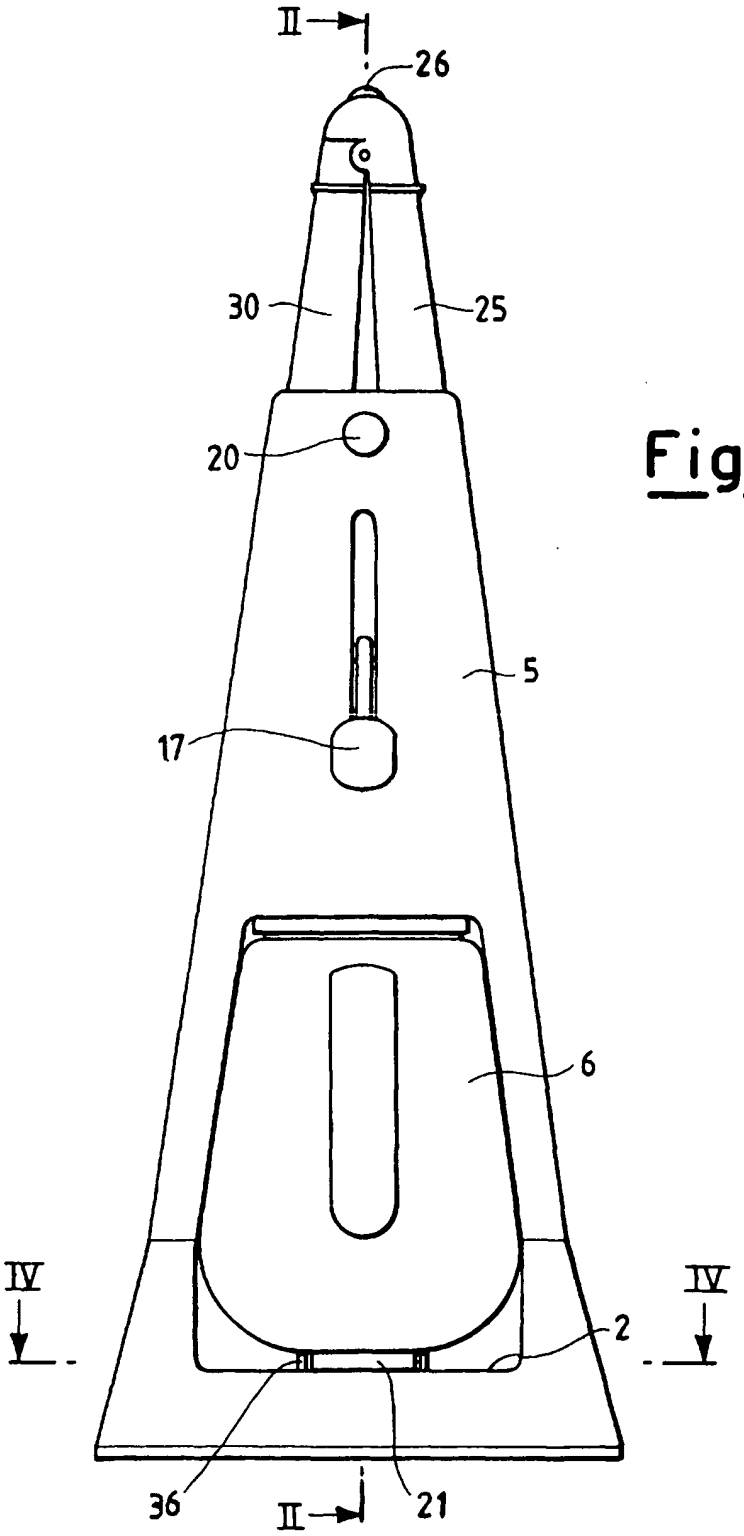

Fig.1

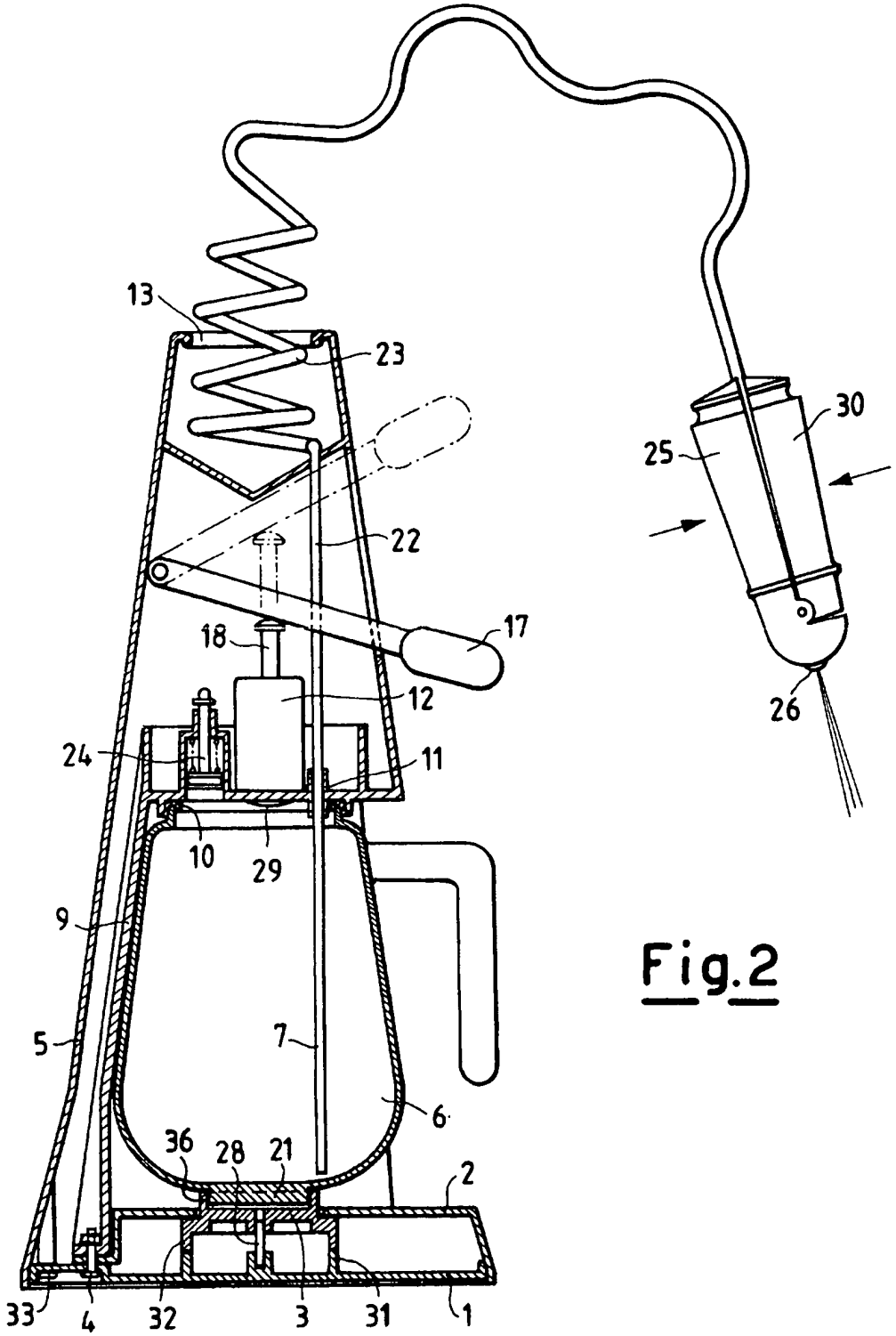

Fig.2

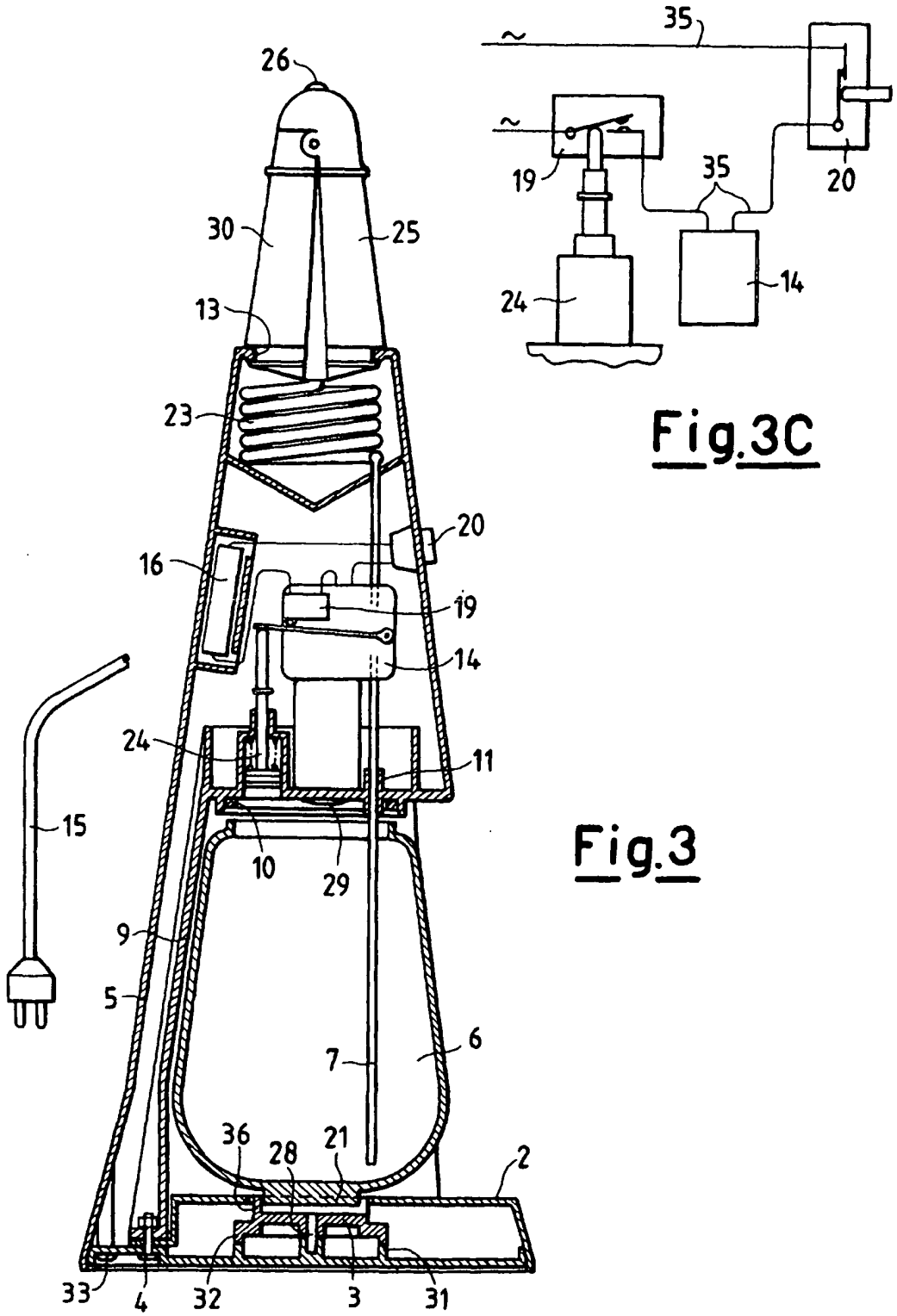
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Fig.3C

Fig.3

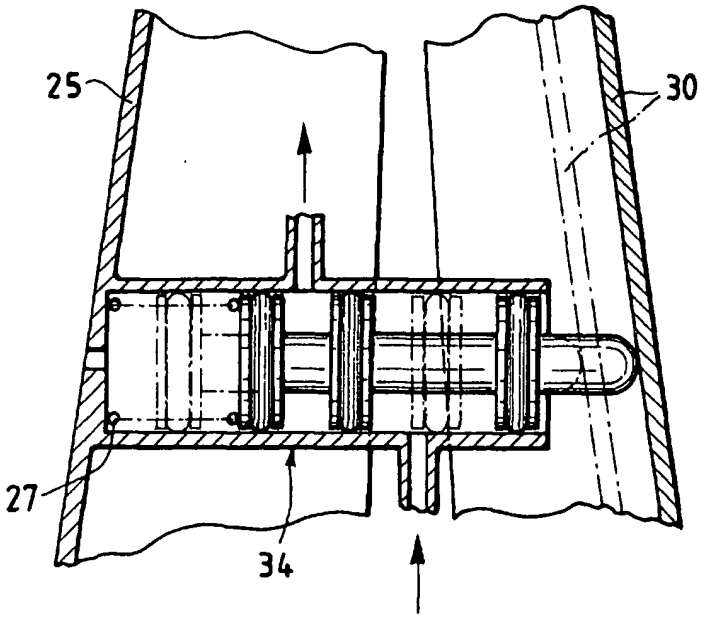

Fig.4A

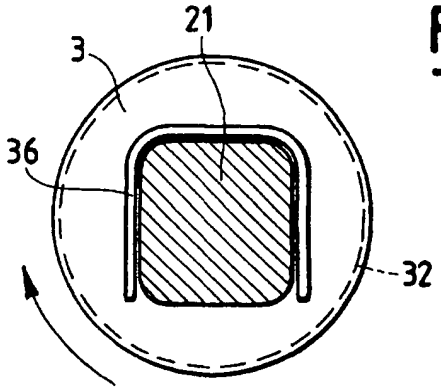

Fig.4C

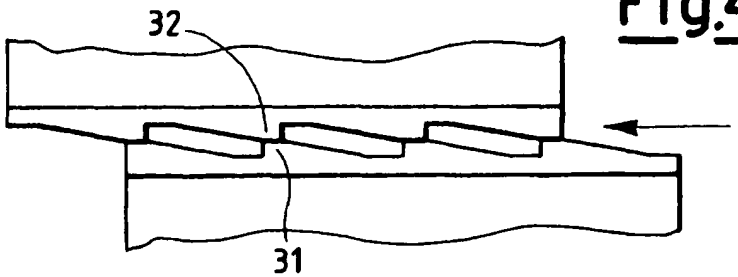

Fig.4D

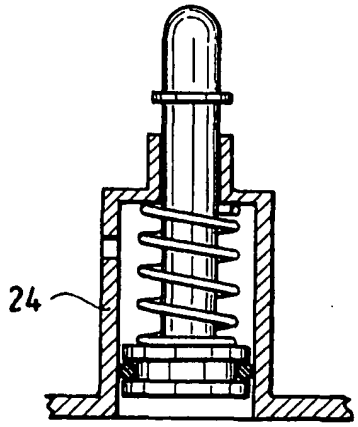

Fig.4B

Fig.4E

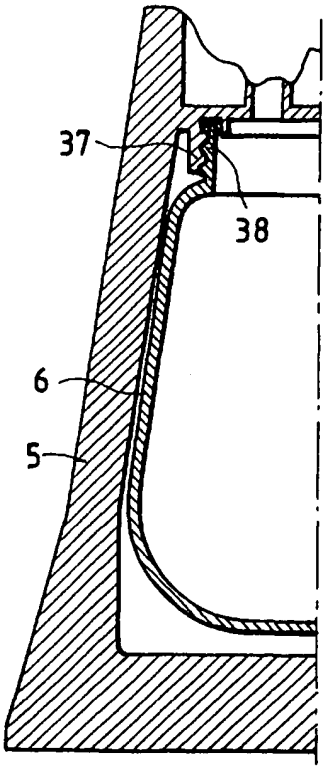

Fig.4F